EVALUATION OF SELECTED SOUTHERN PINE BEETLE INFESTATIONS IN RARE II AND PROPOSED WILDERNESS AREAS WITHIN THE BLACK WARRIOR RANGER DISTRICT

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by

Julie C. Weatherby[1/]

ABSTRACT

On August 25 and 26, 1980 a biological evaluation was performed by Forest Insect and Disease Management on approximately 42,000 acres of wilderness, proposed wilderness, and Rare II areas. Seven southern pine beetle spots, located within ¼ mile of the road separating Rare II and proposed wilderness areas from managed stands, were ground checked. Four of the seven spots were inactive while the remaining three spots exhibited low levels of activity. Based on the current rates of spot growth and the anticipated spot proliferation, beetle activity is decreasing and presently does not threaten adjacent managed stands.

INTRODUCTION

Concern expressed by both district and forest supervisor's office personnel over the potential threat to managed stands posed by southern pine beetle infestations in Rare II and proposed wilderness areas prompted this evaluation. The evaluation, conducted on August 25 and 26, 1980, was performed to determine:

(1) The potential for spot growth
(2) The direction of spot growth of active head(s)
(3) The anticipated spot proliferation

From the data gathered, an attempt has been made to subjectively classify the SPB populations as endemic or epidemic.

METHODS OF EVALUATION AND ANALYSIS OF SPB INFESTATIONS

Aerial Survey

A special aerial survey of 100% coverage of the proposed wilderness and the Rare II areas was performed by Alabama National Forest personnel.

[1/] Entomologist, USDA Forest Service, Southeastern Area, State and Private Forestry, Pineville, Louisiana

All SPB spots were plotted on a district map.

Ground Procedures

All spots located within ¼ mile of a road separating Rare II and proposed wilderness areas from managed stands were ground checked. Stand data for each spot were recorded. Table 1 summarizes this information.

RESULTS

A total of seven spots were located within ¼ mile of adjacent managed stands. Four of these spots were inactive. The data collected from the remaining three spots indicated that spots ranged in size from 8-42 trees with a mean of 22 trees. Within these spots, a mean of 25% of the trees were found to be active.

Old, dense, and slow growing stands located on soils subjected to moisture extremes characterize areas where infestations tend to occur. The hazard rating of these stands is presented in table 3. Generally the stands rank as moderate to very high hazard as a function of the high basal area, the tree height and the land form[2/].

The probability of a spot going inactive 30 days after detection has been calculated for the three active spots (Table 2). All active spots ground checked in this evaluation have approximately a 70% probability of going inactive within 30 days. Therefore, beetle activity is decreasing and presently does not threaten adjacent managed stands.

DISCUSSION

A wilderness area as defined in the wilderness act of 1964 is "an area protected and managed to preserve its natural condition and which appears to have been affected primarily by the forces of nature with the imprint of man's work substantially unnoticable". These parameters place special management restrictions upon areas which over time will allow a continued increase of forest stand susceptibility to SPB damage. Currently within the boundaries of the Rare II and proposed wilderness areas, beetle activity is decreasing and poses little threat to nearby managed stands. However, stand susceptability to beetle attack will continue to increase with age and stocking.

2/ Mason, G. N. 1980. Southern Pine Beetle Hazard Rating Guide, School of Forestry, Stephen F. Austin State University. Nacogdoches, Texas.

RECOMMENDATION

District and Forest Insect and Disease Management personnel should be alert to the increasing potential for population build-up and the proximity of infestations to managed stands. Increases in beetle activity should be reported to Forest Insect and Disease Management (Alexandria Field Office, Pineville, La. 71360, FTS# 497-7296 or commerical 318/473-7296) so that follow-up evaluations can be made. Also, if there are no presuppression flights, detection flights scheduled by FIDM should include the Rare II and proposed wilderness areas.

Table 1. Summary of Southern Pine Beetle Ground Check Data for Rare II and Proposed Wilderness Areas.

SPOT #	VACATED		INFESTED			% INF.	G:R	BA PINE/BA HARD.	DBH/HT	AGE
	RED	TOTAL	RED	GREEN	TOTAL					
1	22	40	0	2	2	5	1:11	160/20	12/82	56
2			INACTIVE					170/40	11/80	53
3	5	11	INACTIVE					170/20	11/65	33
4	5	5	0	3	3	38	1:1.67	150/20	7/40	17
5			INACTIVE					140/20	13/50	50
6	2	11	0	5	5	31	2.50:1	160/50	12/65	48
7			INACTIVE					150/30	10/55	43

Table 2. Additional timber losses to be expected from spot growth over 30 days during summer on the Rare II and Proposed Wilderness Areas of the Black Warrior Ranger District.

SPOT #	INFESTED TREES	BASAL AREA	PROBABILITY OF INACTIVE (P)[1/]	PREDICTED ADDITIONAL TREES KILLED (ATK)[2/]
1	2	180	.73	0
2	-	210		
3	-	190		
4	3	170	.72	0
5	-	160		
6	5	210	.69	0
7	-	180		

1/ P=1/[1 + exp. (-1.144 + 0.069 AT)]; P= Probability of a spot going inactive after 30 days; AT = initial number of active trees; Hedden, R. L. and D. D. Reed, unpublished.

2/ ATK= [(0.000202 IAT x TBA) - 0.2211] x 30; ATK = number of additional trees killed by day 30; IAT = number of active trees at day 0; TBA = Total basal area in Ft.2/acre; Billings, R. F. and B. G. Hynum, 1980. Southern Pine Beetle Guide for Predicting Timber Losses from Expanding Spots in East Texas, Circular 249. Texas Forest Service.

Table 3 Hazard Rating[3/]

SPOT #	BASAL AREA PINE(Ft^2/AC.)	LANDFORM	HEIGHT (FT.)	HAZARD RATING
1	160	SIDE SLOPE	82	VERY HIGH
2	170	SIDE SLOPE	80	VERY HIGH
3	170	SIDE SLOPE	65	HIGH
4	150	SIDE SLOPE	40	MODERATE
5	140	SIDE SLOPE	50	MODERATE
6	160	SIDE SLOPE	65	HIGH
7	150	SIDE SLOPE	55	HIGH

3/ Mason, G. N. 1980. Southern Pine Beetle Hazard Rating Guide, School of Forestry, Stephen F. Austin State University. Nacogdoches, Texas.

Figure 1. Location of SPB infestations within Rare II and proposed wilderness areas.